

Arkema Facility - Harvey Response

Crosby, TX

Arkema Inc.

September 2, 2017

Project #109489 Summary

1.0 Introduction

As a result of flooding events related to Hurricane Harvey, the Arkema facility located in Crosby, TX suffered a loss of power and failure on refrigeration of manufacturing process. The loss of temperature control resulted in degradation and heating of organic peroxides, with the potential of creating a fire. As a precautionary measure, local authorities established a 1.5-mile radius evacuation zone around the facility.

On August 31, 2017, the Center for Toxicology and Environmental Health, LLC (CTEH®) was contacted by Arkema Inc. (Arkema) to initiate air monitoring and sampling around the community areas outside of the evacuation zone perimeter. This submittal summarizes the results of real-time air monitoring conducted by CTEH® personnel from 06:00 on September 1, 2017 to 06:00 on September 2, 2017. A map of the site location is provided in **Attachment A**.

2.0 Real-time Air Monitoring

All real-time air monitoring instrumentation was calibrated per the manufacturer's recommendations prior to air monitoring. Handheld, real-time air monitoring was conducted for benzene, cumene, atmosphere flammability (lower explosive limit - LEL), and volatile organic compounds (VOCs) using RAE Systems and Gastec instruments. Additionally, combustion byproducts potentially associated with fire smoke, such as particulate matter (PM_{2.5}), nitrogen dioxide (NO₂) and sulfur dioxide (SO₂) were assessed. **Table 1** summarizes the data for all real-time air monitoring readings recorded in Crosby, TX from 06:00 on September 1, 2017 through 06:00 on September 2, 2017. Maps of real-time air monitoring locations are provided as **Attachment B**.

Table 1 Real-time Handheld Air Monitoring Readings
06:00 September 1, 2017 – 06:00 September 2, 2017

Analyte	Instrument	Number of Readings	Number of Detections	Range of Detections*
Benzene	UltraRAE	31	0	< 0.025 ppm
	Gastec Tube 121L	7	0	< 0.05 ppm
CO	MultiRAE Plus	40	0	< 1.0 ppm
Cumene	Gastec Tube 122L	2	0	< 50 ppm
LEL	MultiRAE Plus	2	0	< 1.0 %
NO ₂	MultiRAE Plus	14	0	< 0.1 ppm
	Gastec Tube 9L	1	0	< 0.1 ppm
PM _{2.5}	AM510	170	170	0.013 - 0.065 mg/m ³
	Dusttrak	68	68	0.012 - 0.112 mg/m ³
SO ₂	MultiRAE Plus	54	0	< 0.1 ppm
VOCs	MultiRAE Plus	229	0	< 0.1 ppm

*If detections were not observed, the instrument detection limit is listed in this column.

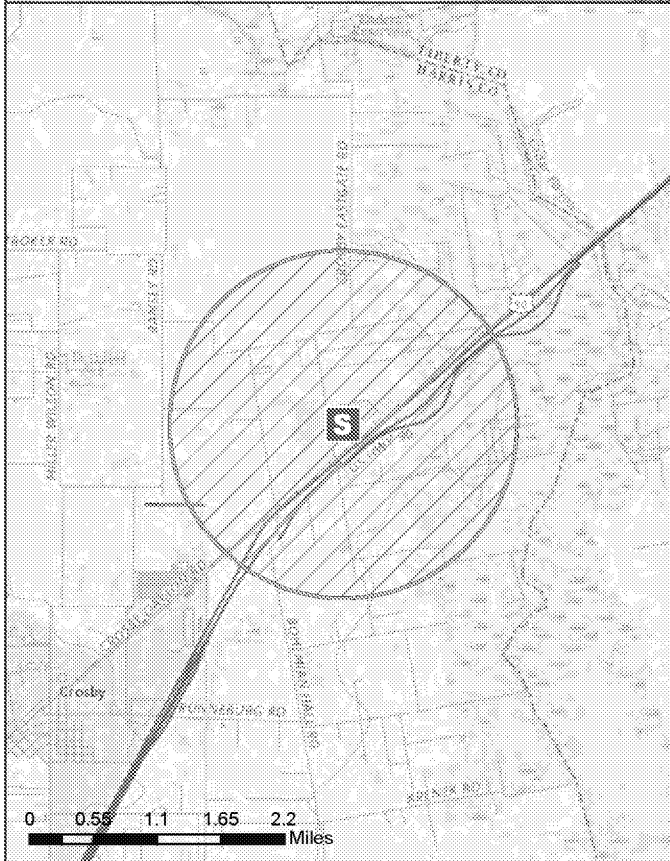
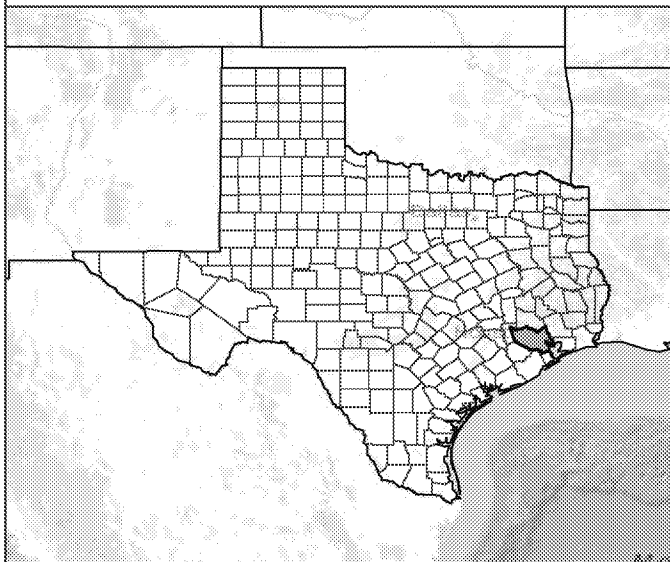
3.0 Analytical Air Sampling

To supplement real-time air monitoring, CTEH® deployed areas along the perimeter of the evacuated area within the community. Evacuated canister (Minican™) samplers were regulated to collect air evenly over a 24-hr period. Analytical air samples will be submitted to SGS Galson Laboratories, an AIHA-accredited laboratory, for analysis using EPA Method TO-15. A map highlighting the analytical air sampling locations is provided as **Attachment C**. Analytical Air Sampling Results will be reported upon receipt from the laboratory.



Attachment A

Site Location Map



Legend

Site

1.5 Mile Buffer

Attachment B

Handheld Real-time Air Monitoring Locations



Hand-held Real-time Reading Locations

Harvey Response - 06:00 September 1, 2017 to 06:00 September 2, 2017



Project: 109458
Client: Arkema
City: Crosby, TX
County: Harris





Benzene Hand-held Real-time Reading Locations

Harvey Response - 06:00 September 1, 2017 to 06:00 September 2, 2017



Project: 109489
Client: Arkema
City: Crosby, TX
County: Harris



PROJECTION SYSTEM: UTM15 COORDINATE SYSTEM: WGS84

Last Updated: 9/2/2017 7:22:15 AM



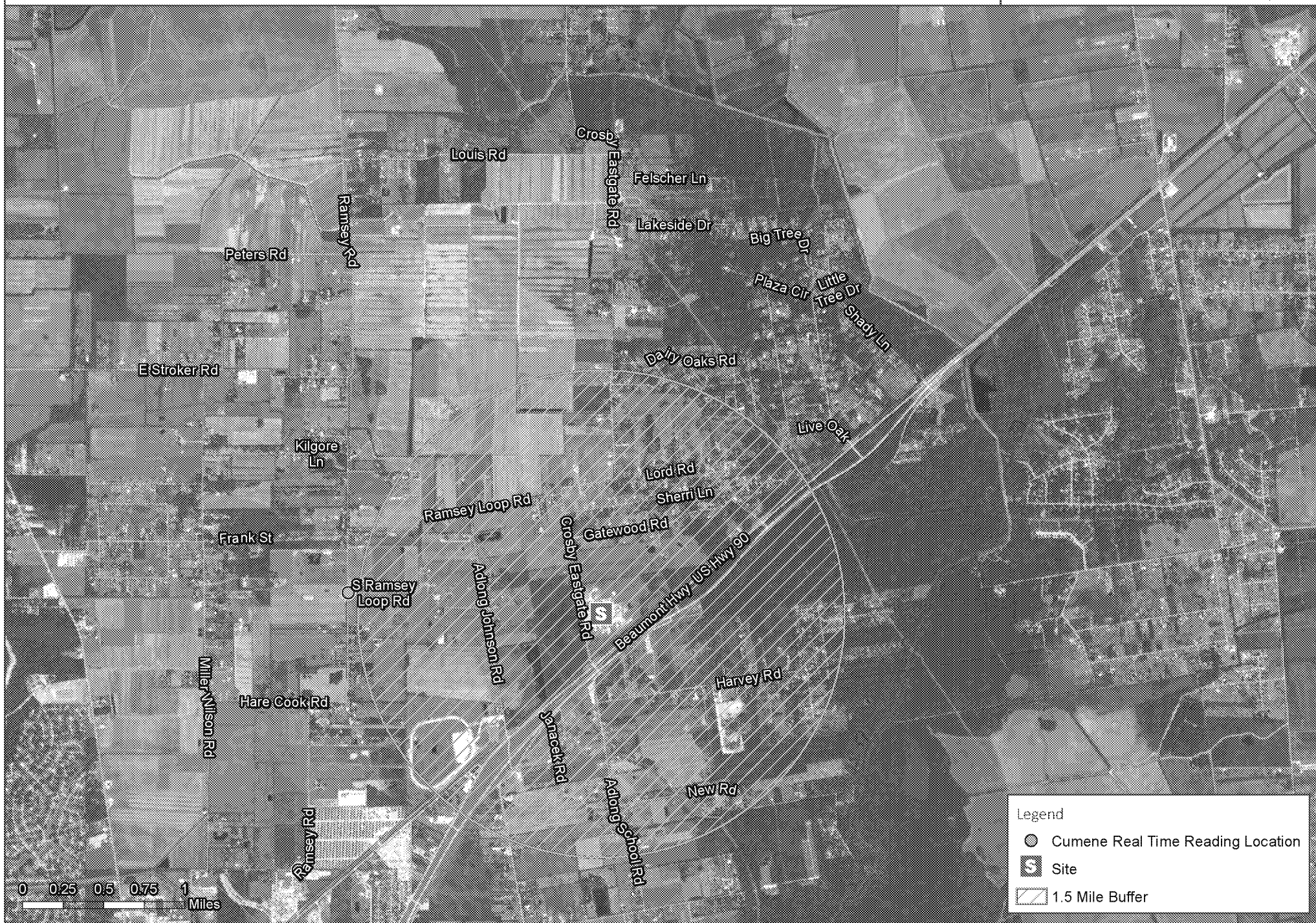
Carbon Monoxide Hand-held Real-time Reading Locations

Harvey Response - 06:00 September 1, 2017 to 06:00 September 2, 2017



Project: 109489
Client: Arkema
City: Crosby, TX
County: Harris





Legend

- Cumene Real Time Reading Location
- Site
- 1.5 Mile Buffer



LEL Hand-held Real-time Reading Locations

Harvey Response - 06:00 September 1, 2017 to 06:00 September 2, 2017



Project: 109489
Client: Arkema
City: Crosby, TX
County: Harris



Legend

- LEL Real Time Reading Location
- S Site
- ▨ 1.5 Mile Buffer

PROJECTION SYSTEM: UTM15 COORDINATE SYSTEM: WGS84

Last Updated: 9/2/2017 7:18:33 AM





PM2.5 Hand-held Real-time Reading Locations

Harvey Response - 06:00 September 1, 2017 to 06:00 September 2, 2017



Project: 109489
Client: Arkema
City: Crosby, TX
County: Harris



PROJECTION SYSTEM: UTM15 COORDINATE SYSTEM: WGS84

Last Updated: 9/2/2017 7:30:18 AM



Sulfur Dioxide Hand-held Real-time Reading Locations

Harvey Response - 06:00 September 1, 2017 to 06:00 September 2, 2017



Project: 109489
Client: Arkema
City: Crosby, TX
County: Harris



PROJECTION SYSTEM: UTM15 COORDINATE SYSTEM: WGS84

Last Updated: 9/2/2017 8:09:39 AM

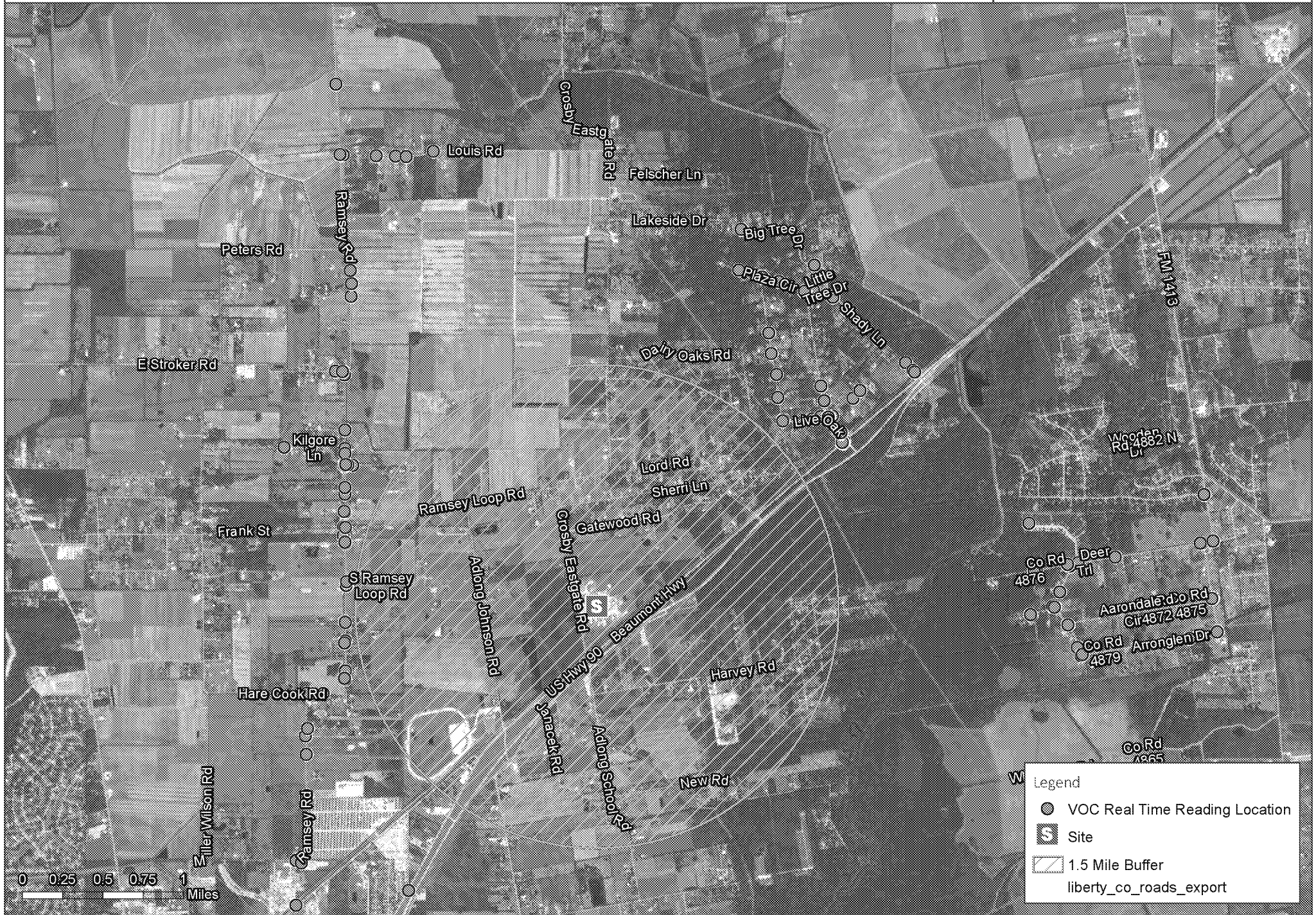


VOC Hand-held Real-time Reading Locations

Harvey Response - 06:00 September 1, 2017 to 06:00 September 2, 2017



Project: 109489
Client: Arkema
City: Crosby, TX
County: Harris



Legend

- VOC Real Time Reading Location
- Site
- 1.5 Mile Buffer

liberty_co_roads_export

Attachment C

Map of Analytical Air Sampling Locations



Analytical Air Monitoring Station Locations

Harvey Response - August 31, 2017



Project: 109458
Client: Arkema
City: Crosby, TX
County: Harris



Attachment D

KHPY Windrose

(Highland Park Airport - 12.5 miles SSE of Site)

Weather Station: KHPY
Date: 2017-09-01

